Forestry

Forestry is designed to develop student knowledge of forestry technology as it progresses into the 21st century. The student will develop skills in producing, harvesting, marketing, and developing forestry products. Forests are one of the state's most valuable resources. If we are to enjoy their products in the future, they must be conserved today.

Pre-requisites: **None**

Recommended Credit: **½ or 1**

Recommended Grade Levels: **10th, 11th, 12th**

***** **½ denotes learning expectations that must be met when teaching the course for ½ credit.**

****** **All other learning expectations must be met when teaching the course for 1 credit.**

Forestry

Standard 1.0

The student will explore careers in the world of forestry.

Standard 2.0

The student will specify major forest products of the world and describe the practices used in the management of these products.

Standard 3.0

The student will analyze methods of tree growth classification and identification of forest trees.

Standard 4.0

The student will recommend basic tools and safety practices in the forestry industry.

Standard 5.0

The student will employ the skills necessary for surveying and cruising timber stands.

Standard 6.0

The student will interpret land descriptions and locate land tracts on a topographical and a standard map.

Standard 7.0

The student will describe the different types of damage that occur to a forest.

Standard 8.0

The student will recommend utilization practices and discuss marketing forest products.

Standard 9.0

The student will integrate academic competencies in the areas of study related to the forestry industry.

Standard 10.0

The student will develop premier leadership and personal growth needed for success and advancement in the forestry industry.

Forestry

Course Description:
This course is designed to develop student knowledge of forestry technology as it progresses. The student will develop skills in producing, harvesting, marketing, and developing forestry products. Students will also evaluate practices to insure the protection of natural resources found in the forest ecosystem.

Standard 1.0

The student will explore careers in the world of forestry.

Learning Expectations:
The student will:

1.1	Assess the importance of trees and forests in rural and urban settings.	½
1.2	Explore the history and current status of forestry in the United States.	½
1.3	Analyze career opportunities available in forestry.	½
1.4	Demonstrate communication skills involved in forestry.	

Evidence Standard is Met:
The student will:

- Demonstrate technology used in the forestry industry.
- Research the history of forestry.
- Compare different careers in the forestry industry.

Integration/Linkages
Biology, Social Studies, Language Arts, Technology Education, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks

- Research terms that are associated with forestry.
- Analyze skills needed for success in the forestry industry.
- Write a description of a forestry career that pertains to the student's geographical area.
- Interview local or state forestry personnel about employment opportunities.

Standard 2.0

The student will specify major forest products of the world and describe the practices used in the management of these products.

Learning Expectations:
The student will:

2.1	Analyze global uses of forests and their products.	½
2.2	Describe the role of a forest manager.	
2.3	Summarize basic forest management practices.	½
2.4	Summarize best management practices used in forestry and their effects on water quality.	

Evidence Standard is Met:
The student will:

- Distinguish the uses for 20 forest products.
- Recommend 10 responsibilities of a forest manager.
- Describe three major forests of the world.
- Recommend forestry and environmental practices to improve land and water quality.

Integration/Linkages
Biology, Social Studies, Language Arts, Geography, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks

- Relate terms of forest management with their definitions.
- Invite a local forest manager to discuss with class major responsibilities of a manager.

- Recommend practices of forestry management.
- Label a world map with major forests and the products produced from them.
- Prepare two-to-three-minute presentation describing the improvements to land and water quality due to management practices.
- Use a live timber stand and write a best management practice program for that stand.

Standard 3.0

The student will analyze methods of tree growth classification and identification of forest trees.

Learning Expectations:

The student will:

3.1	Explain the major parts of the growth processes for trees.	½
3.2	Discuss the classification system of a tree according to size and crown.	½
3.3	Explain hardiness zones.	
3.4	Categorize basic taxonomy and characteristics of leaves, fruits and twigs.	½
3.5	Evaluate the effects of soil fertility on tree growth.	

Evidence Standard is Met:

The student will:

- Compare the functions of tree growth processes.
- Prepare a collection forest tree species.
- Specify the characteristics of tree taxonomy.
- Use soil analysis to determine tree growth.
- Develop and identify a collection of forest leaves.
- Distinguish between softwoods and hardwoods.

Integration/Linkages

Science, Social Studies, Language Arts, National FFA Forestry CDE Guidelines, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks

- Diagram and label the main parts of a tree.
- Label trees according to crown classification.
- Specify nomenclature and taxonomy terms for trees found in the local area.
- Diagram parts of a leaf.
- Prepare a collection of 20 local leaves, identifying their common and scientific names.
- Collect twig, bloom, and fruit samples of local trees.
- Prepare a collection of softwood and hardwood samples.

Standard 4.0

The student will recommend basic tools and safety practices in the forestry industry.

Learning Expectations:

The student will:

4.1	Determine basic safety practices for working in the forest industry.	½
4.2	Recognize the dangers and learn proper safety precautions for working in a forestry environment.	½
4.3	Relate hand tools and power equipment to their uses in the forest industry.	

Evidence Standard is Met:

The student will:

- Describe terms associated with forest safety.
- Describe the effects of heat stroke, cramps, exhaustion and hypothermia on forestry workers and recreational enthusiasts.
- Demonstrate proper use of basic hand and power tools and their safety precautions.

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Integration/Linkages

Biology, Social Studies, Language Arts, National FFA Forestry CDE Guidelines, OSHA Standards, TOSHA Standards, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks

- Specify proper clothing for the weather.
- Recommend measures to prevent heat stroke, heat cramps and heat exhaustion.
- Evaluate the need and uses of forestry tools.
- Recommend safety equipment for recreational and employment purposes in a forestry environment.
- Design a tool safety kit for being in a forest.
- Visit a local forest department and evaluate safety equipment.

Standard 5.0

The student will employ the skills necessary for surveying and cruising timber stands.

Learning Expectations:

The student will:

5.1 Manipulate standard measurements and their equivalents and use common formulas to perform appropriate calculations in forestry.
5.2 Use the basic procedures, calculations and tools of forestry surveying.
5.3 Convert compass-readings and adjust a compass for needed directions.
5.4 Use pacing and chaining techniques to measure horizontal distances, angles, and slopes.
5.5 Determine the types of cruises, the tools used, and the methods of cruising.
5.6 Complete systematic grid layouts for plot and point cruising and determine volume by cruising.

Evidence standard is Met:

The student will:

- Describe the terms associated with basic math used in forestry calculations.
- Relate standard English measurements to their metric equivalents.
- Calculate perimeter, area and volume of standing timber, land acreage and marketable board feet.
- Examine the importance and function of surveying and related terminology.
- Determine the characteristics of a forest survey, select the tools needed for the survey and distinguish survey team member's tasks.
- Describe the compass, measurements to their values and symbols and distinguish between azimuths and bearings.
- Use pacing and chaining techniques to determine acreage in a plot of land.
- Describe the terms, tools and materials used in cruising.
- Determine the trees to be tallied in a point sampling.

Integration/Linkages

Mathematics, Science, Social Studies, Language Arts, National FFA Forestry CDE Guidelines, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks

- Solve conversion problems using metric and English systems.
- Demonstrate the ability to adjust the compass to true readings.
- Determine the length of your pace.
- Chain a horizontal distance as a head and rear chainperson.
- Complete a systematic grid layout for a point sampling.
- Determine saw timber volume by point sampling.
- Determine board feet and number of horizontal logs.
- Calculate height and volume of standing trees.

Standard 6.0

The student will interpret land descriptions and locate land tracts on a topographical and a standard map.

Learning Expectations:

The student will:

6.1 Interpret a topographic map.
6.2 Utilize different types of compasses.
6.3 Plot a compass reading on a map by azimuth and bearing readings.

Evidence Standard is Met:
The student will:
- Map out a plot of hardwoods or softwoods for a commercial harvest using a written description of the plot.
- Use a topographical map and determine the best management practices for a forest stand.
- Use a compass and pacing to determine position and size of a stand of timber.
- Use a compass to give readings for a stand of timber.

Integration/Linkages
Mathematics, Language Arts, National FFA Forestry CDE Guidelines, Geography, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks
- Specify reasons for the land location for forests.
- Distinguish among types of legal land descriptions.
- Relate line divisions used in the United States Public Land Survey system to their descriptions.
- Diagram the principle meridians, baselines, and initial points in your state.
- Interpret the map legend.
- Label contour configurations.
- Calculate bearings and azimuths of points on maps and from visual points of reference.
- Visit local forestry offices and review area forester maps.

Standard 7.0
The student will describe the different types of damage that occur to a forest.

Learning Expectations:
The student will:

7.1	Specify types of causes and effects of wild fire and prescribed fires.	½
7.2	Recommend tools and techniques for fire fighting.	½
7.3	Evaluate the causes and control of damages caused by insects, diseases, wind and pollution.	½

Evidence Standard is Met:
The student will:
- Apply team skills in developing a good timber stand improvement program in a given area.
- Compare the types and effects of fires on forests.
- Relate tools and uses in fighting fires in forests.
- Differentiate between damage caused by insects, pollution, wind and diseases.

Integration/Linkages
Ecology, Entomology, Biology, Social Studies, Language Arts, National FFA Forestry CDE Guidelines, Geography, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks
- Recommend forest fire protective practices for a given area.
- Relate the types of wild fires to their causes.
- Compare the parts and effects of wildfires.
- Distinguish between direct and indirect methods of attacking a fire.
- Relate terms associated with insects, disease and natural damage to their correct definitions.
- Debate the effects of damage to a forest.
- Describe the symptoms of damage based on the type of insect or related disease.
- Describe the types of environmental and animal damages.
- Collect and analyze damage on wood from fires, diseases, insects, and the weather.

Standard 8.0
The student will recommend utilization practices and discuss marketing forest products.

Learning Expectations:

The student will:

8.1 Evaluate forest utilization practices.
8.2 Specify forest-marketing techniques for highest returns.
8.3 Evaluate worldwide markets for forest products.

Evidence Standard is Met:

The student will:

- Prepare a utilization chart for a given tract of forest products.
- Prepare a long-term utilization plan for a forest tract.
- Determine markets for local forest products.

Integration/Linkages

Marketing, Social Studies, Language Arts, Geography, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks

- Determine contract responsibilities for forest management.
- Create a scenario of a day in the forest that includes six nonconsumptive uses of the forest.
- Specify marketing practices for selling forestry products for the highest returns.
- Recommend specialty markets for various forest products.
- Prepare a sales contract for selling timber.

Standard 9.0

The student will integrate academic competencies in the areas of study related to the forestry industry.

Mathematics:

The student will:

9.1 Use basic math for calculating distances, area and volume. ½
9.2 Use methods of triangulation to determine distances and location. ½
9.3 Calculate ratios and proportions. ½
9.4 Use basic algebraic equations to predict forest production.

Science:

The student will:

9.5 Apply the scientific method for developing best management practices for forest management.
9.6 Relate physical laws to factors affecting forest growth.
9.7 Summarize biological factors affecting forestry.
9.8 Summarize genetic principles and reproduction that govern forest growth and production.
9.9 Detect species of flora and fauna.

Language Arts:

The student will:

9.14 Synthesize research data in an original work related to forest management and present the work.
9.15 Use advanced publications to research career opportunities and skills needed in forestry.

Evidence Standard is Met:

The student will:

- Design a forest management plan, based on the cultural and environmental factors of the location.
- Calculate the production of a standing forest.
- Determine appropriate harvesting methods, based on cultural and environmental concerns.

Integration/Linkages

Geography, Social Studies, Mathematics, Algebra, Geometry, Language Arts, SCANS (Secretary's Commission on Achieving Necessary Skills), Biology, Chemistry

Sample Performance Tasks

- Prepare a forestry management portfolio consisting of management and harvesting techniques.
- Estimate the value and use of standing timber.

Standard 10.0

The student will develop premier leadership personal growth needed for success and advancement in the forestry industry.

Learning Expectations:

The student will:

10.1	Conduct meetings using appropriate rules of conduct and parliamentary procedure.	½
10.2	Evaluate a code of ethics for business.	
10.3	Develop public speaking skills needed to communicate in the forestry industry.	
10.4	Develop an SAEP, supervised agricultural experience program, based on forest utilization.	½

Evidence Standard is Met:

The student will:

- Conduct meetings using Roberts Rules of Order.
- Recommend a code of ethics needed in the forestry industry.
- Develop a portfolio of student accomplishments preparing for career success.
- Prepare presentation on the benefits and responsibilities of forest management.

Integration/Linkages

Language Arts, Leadership, National FFA Guidelines on Proficiency Awards and Degrees, National FFA Guidelines for Parliamentary Procedure CDE, National FFA Guidelines for Prepared Public Speaking CDE, SCANS (Secretary's Commission on Achieving Necessary Skills), National FFA Guidelines for Community Education Programs

Sample Performance Tasks

- Perform the FFA opening and closing ceremony, using eight parliamentary abilities and motions.
- Generalize the codes of ethics needed in industry.
- Prepare presentation on the economical and environmental benefits of appropriate forest management.
- Complete an application for FFA proficiency award and advanced FFA degree.
- Complete a record book for an SAEP.
- Participate in FFA PALS program.
- Participate in Farm Safety Just 4 Kids.
- Participate in America Reads Challenge.